## Show Me the Money!!! American Idol, Inc. idol

**Key Standards:** MM3A5. Students will use matrices to formulate and solve problems. Students will represent a system of linear equations as a matrix equation and solve that system using inverse matrices.

## Problem Scenario:

American Idol has hired you as an entertainment promoter. You must make at least $148,000 from ticket sales in order to cover the costs and make a reasonable profit. The auditorium has 4000 seats with 2000 on the lower floor and 2000 on the upper floor. Attendees will pay $20 more for the lower-level seats than for the upper seats. As a promoter, your job is to determine the selling price for each ticket type. Being an ambitious sort, you want to propose hosting a second event at a larger arena with 13,000 seats: 7000 upper seats and 6000 lower seats. Ticket sales must total $557,000. Attendees will pay $30 less for the upper-level seats than for the lower-level seats You must prepare a two-prong business proposal. The first “prong” is to show how much you suggest each type of ticket be sold for the smaller arena. The second “prong” is to create a proposal for the larger arena. Your proposal should be submitted as a report, powerpoint, video, brochure, or other approved medium.

## Whole-Class Instruction:

* Solving systems of equations via graphing
* Solving systems of equations via substitution
* Solving systems via elimination

## Group Work:

Students may select their group based on the type of concert that you wish to research.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Group One | Group Two | Group Three | Group Four | Group Five |
| Rock  Choose 3 artists from this category. Research how much tickets cost for their concert and how that price varies per type of seat. Create a matrix based on artist and type of ticket. | Country  Choose 3 artists from this category. Research how much tickets cost for their concert and how that price varies per type of seat. Create a matrix based on artist and type of ticket. | Broadway  Choose 3 artists from this category. Research how much tickets cost for their concert and how that price varies per type of seat. Create a matrix based on artist and type of ticket. | Pop  Choose 3 artists from this category. Research how much tickets cost for their concert and how that price varies per type of seat. Create a matrix based on artist and type of ticket. | Rap  Choose 3 artists from this category. Research how much tickets cost for their concert and how that price varies per type of seat. Create a matrix based on artist and type of ticket. |

## Individual Work:

Each student will complete the following:

* Write a system of equations for the lower floor seat price and the upper seat price for BOTH the smaller auditorium and the larger auditorium.
* Solve the system graphically. Use graph paper.
* Solve the system using substitution.
* Solve the system using elimination.
* Create your business proposal for American Idol including how much should be charged for each ticket type. Cite the information you gained in working with your groups to support your suggestion.
* Provide reference for ticket prices
* Explain why an exact answer is or is not important in this context.

## Methods of Assessment:

List all the methods of assessment used in this unit:

* Quiz
* Checklist and Rubric